Session 1B: Intertidal and Nearshore Ecology

Questions & Answers

Carolyn Jenkins
Q: What other management approaches, one other pops in mind for me in that is, increasing the number of public access sites or their size to reduce impacts of trampling – has your group looked at that or discussed it at all?

Jenkins: Yes, the more shorelines we can set aside, the better off we'll be. Interesting observations that we made while we were at the park—families (adults with small children) were seen most frequently in the intertidal zone. Those and teenagers. Adults that were there kind of leisurely, didn't venture into the intertidal zone as frequently as smaller children. But I think we have concluded that in order to better assess recovery time, a long-term study is needed which will help us become more informed and to establish better management practices.

Q: If I understood your methodology right, you have this transect going down which you walk back and forth on to create your trampled effect. It seems to me that the area immediately to each side of the transect was not trampled. So it seems to me that animals like whelks can move into your transect from the surrounding area whereas if you had a public which was running randomly over the whole area the whole area would have been equally impacted and your results might have been quite different. So I'm just wondering, to what extent the recovery and so on was a result of the bias or artifact of you experimental design?

Jenkins: That is what in fact what we have concluded in our paper in that the ability for local recruitment between time periods that we measured, we feel that is why did not find a significant effect for limpets and whelks in particular because of their ability to move into the new areas. We used transects in order to simulate studies that have been done by Debra Grosnig on the Oregon Coast. In comparing our data with other trampling studies that have been done, those studies did find significant impacts on barnacles, limpets and other mobile species. We feel that our study period was an insufficient amount of time in order to find such results.

Q: So in parks and so on, you often see trails that people walk along and you are discouraged to walk off the trail because of the impacting, is that, when you talk about sacrificial areas, is that what you might be recommending for the intertidal zone in the long-term and heavily used areas that there be trails that people would be encouraged to stay on?

Jenkins: We would feel that that might facilitate local recruitment and recovery, like you said. Just along our transects, species were able to move in or settle into those areas, which would help facilitate or help to just maintain the biodiversity found in that area.

Q: Just a follow-up on that question, any suggestions for how you might go about establishing trails in the intertidal zones? And how you would mark them?

Jenkins: You know, personally, I have not come up with a concrete method. We used semi-permanent marine epoxy which worked in some ways, also it did not work in others. I think that's one of the questions or difficulties that is posed with this type of problem in that in an intertidal environment an area that is covered by water half the time, how do you establish trails or how do you establish clear indicators of where they would like people to go and where they would not? We tried to set up human exclusion sites, we dropped them from our study because we found that there was simply an insufficient amount of people in the park at the time from early April to May. There wasn't enough people to warrant having those treatments in our study. We've used flagging tape to mark areas asking people to stay out of those areas, posting signs along the shoreline. We also set up an educational outreach center in that we provided a touch tank and signs which enabled us to speak with the people, park visitors, and asked them to be careful while

they are walking into that zone. Help educate them a little bit, like was shown in the graph. Eighty-five percent of the people walked down there, but only 60% could name more than one organism found there and we feel that education is a great option and a great environmental preservation tool.

Q: If I could just make one comment. If you go to a university campus and watch where people walk and avoid the paths and cut across the grass and so on, people are going to walk where it is safe to walk, particularly when you look at fucus and whelks, which are on hard substrates, rocks, so you might want to figure out where the safest path is and make sure that's your trail because if you don't, that's where they are going to walk.

Jenkins: I just wanted to make a comment that I spent a lot of summers in parks in and around the state and the fact is, that folks do follow a path and don't trample through. It's a little bit easier to follow that path and I guess you're traveling itself to create that. One of the things is that we put natural physical barriers that keeps people from going in those areas without a lot of signing all over.

A: We also observed that people or adults in the intertidal zone were found to stay higher up on the shoreline rather than venture onto the fucus garden or canopy just because it looked slippery. That was also affected by the day, the temperature, what the weather was like. Children were actually the ones that were observed to scramble along the rocks, kick things off, with greater frequency than adults were.

Christopher Harley
Q: There has been an increase in significant wave height through the years and will that increase diversity because it is moderating physical stress?

Harley: I would say probably not, if it's just during storms, that happens because the real killer tides are the low tides where it's flat calm. Because that's when the water stays out the longest so as long as you have one or two of those every other year, the upper limit should not change too much.

Q: Would a rise in sea level detect a pattern?

Harley: That would probably just shift everything up the shore. What would be more complicated would be an increase in air temperature. If you remember back to that slide of the sort of red shape pattern of the algae and the X axis was increasing physical stress, that could be increasing stress through time, and that gets really tricky because climate change may not just move things up and down the shore, it may actually pinch certain species out to local extinction. But for just rising sea level, I think everything would sort of keep track with that.

Q: You looked at wave height as a…factor as you went from west to east, but there are other factors that vary like salinity and water temperature, did you look at those other factors?

Harley: I haven't yet, but they are on my list.

Jim Brennan
Q: In the riparian system streams, there's a 15-meter setback for most fish-bearing streams. Do you have any idea what might coming forward in the state in the forms of measures as a marine riparian strip?

Brennan: As far as recommendations for management zones? The State Department of Ecology has recently put out some guidelines for shoreline management. I don't know if they were making any specific recommendations, they do manage within 200 feet of the shoreline. King County is developing a management plan for shorelines and the recommendation there is to have a 100-foot no-touch with another 100-foot limited amount of development. But as you mentioned, it depends greatly and I didn't have much time to talk about this, but it depends greatly on the types of vegetation, the slopes, the soils, how much rain you get, the precipitation, there is numerous factors that have to be considered here. And also what your goals are. If we want to talk about preserving wildlife habitat we may need 600 meters, if you want to

really take care of critical species of wildlife. If it's to reduce nitrates or phosphates, 60 meters may be enough in some circumstances.

Q: I gather you don't see a standard measure being applied on a coast-wide basis, is going to be voluntary, because I would think if you are talking those distances, they are a lot larger than a lot size would be in most cases?

Brennan: I suspect that there are going to be plenty of compromises. I think that what we need to do is develop more of the science first so we know what damage we are doing, and then make decisions based on the information.

Q: As I listened to you it reminded me of the panel discussion this morning and the whole link where do we need more science and how do we communicate these needs and how do we better protect in this case our shoreline? We've been in such a situation where we haven't had very good science, we haven't even used the word riparian as you pointed out. I really appreciate your work and these steps toward to giving us more and more literature so that when we go to policy makers we have more in our hand to do that.

Brennan: Thank you

Q: There was a recent study done in North Carolina to achieve water quality protection through a 80-meter buffer. In this report, when you reported the various buffer widths that you need to accomplish and summarize the various information in tables because that is the kind of information would be very, very helpful in discussing this and testing these and going to policy makers.

Brennan: Yes we will. In fact, we did a pretty extensive literature search and review and it was not exhaustive but it doesn't need to be for marine riparian papers because there are not that many out there. Although we found some pretty good information, there's a number of reports that are out by EPA and some other summary reports that we refer to in the Barent-Cohen report. I think they are very helpful and a number of those do provide good information on the amount of riparian vegetation you need to perform certain functions. However, again, we have to think about where this is being applied. The Northwest might not be the same as North Carolina. So I think we are probably going to have to do some science here, unless you think that policy makers are willing to accept 200 feet no-touch.

Q: Did you look at the function of estuarine and marine systems in terms of export out to offshore areas as well or were you strictly looking at shorelines?

Brennan: No, unfortunately, a lot of this information just hasn't been quantified. All we know in literature it is certainly talked about it hasn't been forgotten completely, but there are few studies that have actually quantified a lot of this. Like I said, a few of these functions we do have good quantifiable data, but unfortunately, for woody debris, we know there used to be a lot more wood, especially after they started logging and chopping bluffs into the Puget Sound to transport them. And we still see a lot of wood sometimes in certain areas where a log raft breaks up or beaches that have been preserved for some reason or another. And that does break down and there are some studies that talk about the levels of organic carbon that come in leaf litter or from wood but they are very limited. I think that would be a great study.